📘 **Class 10 - Introduction to Trigonometry**

🔥 **25 Advance level questions**

Q1. If sin A = 3/5, prove that:
$(1 + \tan^2 A) / (1 + \cot^2 A) = \tan^2 A$

Q2. Prove that:
$(1 - \sin A)/\cos A + (1 + \sin A)/\cos A = 2 \sec A$

Q3. If sec A + tan A = p, prove that:
$\sec A = (p^2 + 1)/(2p)$, and $\tan A = (p^2 - 1)/(2p)$

Q4. Simplify:
[sin A (1 + cot A)] / [cos A (1 + tan A)]

Q5. Prove that:
$(1 - \tan A)/(1 + \tan A) = (\cos A - \sin A)/(\cos A + \sin A)$

Q6. If cot θ = 5/12, evaluate:
$2 \cot \theta / (\text{cosec}^2 \theta - \cot^2 \theta)$

Q7. Prove that:
$(1 - \cos^2 A)/\tan^2 A = \cos^2 A$

Q8. If cos A = 5/13, find the value of:
(1 - sin A)/(1 + sin A)

Q9. Prove that:
(tan A + sec A - 1) / (tan A - sec A + 1) = (1 + sin A)/cos A

Q10. If sin A + cos A = √2 × sin A, find the value of tan A

Q11. Prove that:
(1 + sin A)/cos A + (1 - sin A)/cos A = 2 sec A

Q12. Evaluate:
(sin⁴ 30° + cos⁴ 60°) / (sin² 30° + cos² 60°)

Q13. If tan θ = 3/4, prove that:
(1 - sin θ)/cos θ = 1/2

Q14. Simplify:
(cos A + sin A)/(cos A - sin A) + (cos A - sin A)/(cos A + sin A)

Q15. If sec θ = 17/8, find the values of:
(i) tan θ (ii) sin θ (iii) cosec θ

Q16. Prove that:
$(1 - \cot^2 A)/(1 + \cot^2 A) = (1 - \cos 2A)/(1 + \cos 2A)$

Q17. If $\sin A = 5/13$, evaluate:
$\sin A \times \sec A + \cos A \times \operatorname{cosec} A$

Q18. If $\tan A + \cot A = 2$, prove that:
$\tan^3 A + \cot^3 A = 2$

Q19. Simplify and evaluate:
$(1 + \tan^2 45°)/(\operatorname{cosec}^2 30° - 1)$

Q20. If $\tan A = 3/4$, prove that:
$\sec A - \cos A = 7/20$